

Water quality labs under the microscope

A nationwide call is going out to all laboratories engaged in water quality testing to participate in the compilation of a database which will provide potential clients with information of testing services in their areas.

The initiative is being spearheaded by the Water Research Commission (WRC), who has appointed a research team from Jeffares & Green, Umgeni Water and the National Laboratory Association to undertake the investigation. The WRC is seeking to implement an accepted and practical water quality testing standard for all laboratories in South Africa thereby preventing the irregularities and occasional health risks currently experienced in water quality.

In order to produce such a standard, an investigation is being conducted into the existing conditions, problems and capacities in all water testing laboratories. A comprehensive picture of the current situation is vital as various issues have been reported as stumbling blocks to improving the quality of laboratory results and these need to be addressed.

The first step will be to undertake a survey of laboratories and gather information on expertise, accreditation status, geographic location, procedures and infrastructure. A Geographic Information System (GIS) will be developed and will provide basic information such as laboratory name, location, contact



details and the type of testing services provided. The WRC will make this information available to interested parties so that potential clients can find information relevant to a laboratory in their area.

The Department of Water Affairs & Forestry hopes to use the GIS to develop and maintain an up-to-date database of

laboratories so as to provide information when requested, thus ensuring that this research remains current and relevant. The results of the investigation will provide insight into the value of SANS 17025 accreditation and perhaps assist in the formulation of practical alternatives to validation and control through self-regulation within the laboratory fraternity. It is anticipated that, following the analysis of the survey results, the research team will be better positioned to present information on the status of water quality testing challenges and basic training needs.

One of the greatest challenges for the project team is to build a comprehensive database of all laboratories that undertake water quality testing. The project team would like to encourage any laboratory that tests for water quality to contact them and be a part of this exercise.

For enquiries, contact the Jeffares & Green Water Research Unit at Tel: (033) 347-1841; Fax: (033) 347-1845; E-mail: jgipmb@jgi.co.za

CT gets new water demand system

The City of Cape Town has introduced a new water demand management system for its residents.

The system comprises a water management device, which is installed in residents' houses. A central control team in the City administration regulates the functioning of these devices with the help of a computer setup.

According to the metro, the system will assist its customers to save water and manage their monthly water bills, while helping the City to manage debt. "It will also help

residents to identify any leaks and have them fixed, instead of running up a huge water bill and then being unable to pay."

The water management device measures out a specific supply of water on a daily basis at the pressure and flow rate to which households have become accustomed. It allows residents to receive their free six kilolitre portion of water per month, and it allows them to receive an additional amount according to what they commit to paying.

At the time of writing, devices had been installed in more than 4 000 houses.

WATER BY NUMBERS

6 400 – The estimated number of job opportunities created through the implementation of 11 sanitation projects in North West province in the 2006/2007 financial year to date.

1 345 – The number of infrastructure-related projects the Development Bank of Southern Africa (DBSA) was involved in at municipalities last year. The bank provided project management expertise, assisted in the preparation of technical reports, and also dealt with issues surrounding contract management.

60 000 – The estimated number of deaths annually as a result of climate-related natural disasters, according to the World Health Organisation.

226 – The number of informal settlements in Cape Town.

263 – The number of international shared river basins worldwide, according to UNESCO. Over 45% of the land surface of the world is covered by basins that are shared by more than one nation.

US\$799-million – The estimated cost to construct the Bujagali Dam in Uganda. Construction of the hydropower dam on the Nile River started in August last year.

300 – The number of schools in Cape Town out of 956 schools surveyed which reported a high water wastage factor with minimal income for infrastructure purposes.

200 billion tons – The ice lost in Antarctica in 2006 due to the shrinking of the polar cap. According to a report published in *Nature* in January, Antarctica lost an average of 152 km³/year of ice from 2002 to 2005.

R1-million – The funds donated by the South African Bureau of Standards to improve the mathematics and science skills of 70 teachers in Bushbuckridge.

180 000 – The number of articles available in the online archive of prestigious science journal *Nature*. Every issue, dating back to the first magazine from 1869, has now been included in the journal's digital archive. The project has taken over five years to complete.

WATER DIARY**WATER****MARCH 4-7**

Water China 2008, the largest Chinese trade fair for the water industry will take place in Guangzhou, Canton.

Enquiries: Merebo Messe Marketing; Tel: +49-40-6087-6926; E-mail: contact@merebo.com; Visit: www.waterchina.merebo.com

FRANCHISING**MARCH 19-20**

A conference on franchising for the water sector will be held at Helderfontein Estates, in Gauteng. *Enquiries: Juanita Males, Scatterlings of Africa, Tel: (011) 463-5085, E-mail: Juanita@soafrica.com*

SBR TECHNOLOGY**APRIL 7-10**

The Fourth International Conference on Sequencing Batch Technology will take place in Rome, Italy. *Enquiries: Dr Roberto Ramadori; Tel: +39-06-884 1451; Fax: +39-06-841 7861; E-mail: sbr4abstract@irsa.cnr.it; Visit: www.sbr4conference.com*

WATER & SANITATION**APRIL 7-11**

The 33rd Water Engineering & Development Centre (WEDC) International Conference will take place in Accra, Ghana. The theme is 'Access to Sanitation and Safe Water: Global Partnership and Local Actions'. *Enquiries: Conference administrator; Tel: +44 (0) 1509 228-304; E-mail: wedc.conf@lboro.ac.uk*

FILTRATION**APRIL 14-18**

The 10th World Filtration Congress & Exhibition is taking place in Leipzig, Germany. *Enquiries: info@wfc10.com or Visit: www.wfc10.com*

WATER**MAY 18-22**

The Biennial Conference of the Water Institute of Southern Africa (WISA) will be held at Sun City. *Enquiries: Dr Heidi Snyman (technical programme); Tel: (012) 330-0340; E-mail: heidis@wrc.org.za; or Juanita Males (delegates & sponsorships); Tel: (011) 463-5085, E-mail: Juanita@soafrica.com*

Manual to help financial decision making

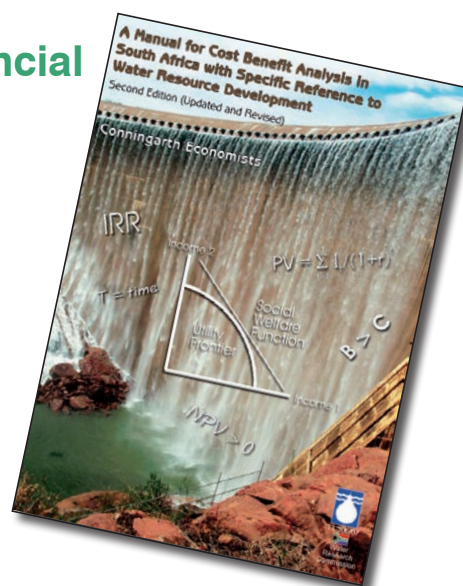
A new manual for conducting cost-benefit analysis with specific reference to evaluating the development and management of water resources is now available from the Water Research Commission (WRC).

This evaluation of projects is often a difficult task since costs and benefits cannot necessarily be seen immediately, but rather occur over time. Furthermore, costs and benefits are often hidden, making them hard to identify, and also frequently difficult to measure.

The same problems occur when decision makers have to make a choice between a number of projects. These challenges are not limited to capital projects; they also occur when decisions have to be made regarding the merits of expenditure programmes.

The cost-benefit analysis method provides a logical framework by means of which projects can be evaluated, serving as an aid in the decision making process. The manual, authored by Conningarth Economics, is aimed specifically at the decision maker in the public sector.

The manual follows a broader approach to incorporate the relationships between cost-benefit analysis and other aspects of the economy. In this regard the relationship between the principles of cost-benefit



analysis and welfare economics; as well as cost-benefit analysis as one component of the range of decision making support instruments, have been included, among others. The manual also includes insight into the cost-benefit analysis application possibilities for decision makers. The manual advocates that the cost-benefit analysis concept needs to be widened to include the broader social costs and benefits derived from a project. Furthermore, it is accepted that cost-benefit analysis is only one of several instruments for evaluating proposed projects.

To order the cost-benefit analysis manual (WRC Project No **TT 305/07**), contact Publications at Tel: (012) 330-0340; Fax: (012) 331-2565 or E-mail: orders@wrc.org.za

Clean water vital in fight against AIDS

Access to improved water supply and sanitation could greatly improve the quality of life for people living with HIV/AIDS, according to international organisation, the Water and Sanitation Programme (WSP).

Many of the opportunistic infections that kill people living with HIV/AIDS are transmitted through contaminated water and unsanitary living conditions. People suffering from the disease require safe, sanitary toilets and large quantities of water to keep themselves and their surroundings clean.

In a statement released ahead of World Aids Day on 1 December, WSP said that



there was a lack of research on the role the water sector plays for people living with HIV/AIDS. "It is necessary for the global HIV/AIDS community to work with the global water community to develop a consensus list of prioritised research needed on water and sanitation and HIV/AIDS, said Dr Kate Tulenko, a public health specialist of

the WSP.

The Water Research Commission has managed research on the importance of access to safe water and sanitation for the efficient caregiving of HIV/AIDS patients (see *Water Wheel* July/August).

Satellite data warn of famine

A NASA research team has reportedly developed a new method to anticipate food shortages brought on by drought.

Molly Brown of the space agency's Goddard Space Flight Centre created a model using data from satellite remote sensing of crop growth and food prices. Until now officials have mainly studied the after effects of occurrences such as floods and droughts that might affect crop production as their best means of warning of a coming food security crisis. "With this new study, for the first time we can leverage satellite observations of crop production to create a more accurate price



model that will help humanitarian aid organisations and other decision makers predict how much food will be available and what its costs will be as a result," Brown explained. "This is a unique opportunity for an economic model to take climate variables into account in a way that can aid populations large and small."

Global fund for sanitation

The Water Supply & Sanitation Collaborative Council (WSSCC) has set up a new financing mechanism, the Global Sanitation Fund (GSF).

While sanitation has been hailed as the greatest medical advance of the past 150 years, about 40% of the world's population do not have access to basic sanitation. The fund aims to help large numbers of poor people to attain safe and sustainable sanitation services and adopt good hygiene practices.



The GSF only supports work in countries that have national sanitation policies. It is not open to spontaneous expressions of interest.

The official launch of the GSF is expected March.

Global news snippets

- UK scientists have developed a molecule that chews up **uranium-containing ions**, reports *NewScientist* magazine. Researchers at the University of Edinburgh have found that the large organic molecule, known as a macrocycle, can fold in half to form a structure like a pair of jaws. These 'jaws' are used to capture uranyl ions.
- Uganda's National Water and Sewerage Corporation is constructing a new facility for **training and research** in Kampala. The facility is being established through the company's internally generated funds with support from the German Technical Corporation and Makerere University.
- City Water Services, a subsidiary of international water company Biwater, has lost an international **legal case** for breaching its contract to deliver water and sanitation services in Dar es Salaam, Tanzania between 2003 and 2005. Tanzania has been awarded more than £3 million in damages and over £500 000 in legal costs.
- Drought-stricken Cyprus is considering **importing water**. The Mediterranean island is experiencing its fourth consecutive year of drought. Authorities are evaluating importing water via sea tankers from the Greek island of Crete.
- South African investment bank ABSA Capital has teamed up with Barclays to arrange for the commercial debt facility for the US\$867-million **Bujagali hydropower** project in Uganda. The project involves the construction of a 250 MW hydroelectric power station on the Nile River.

Brazilian fishways 'deathtraps' – study

Researchers in Brazil have found that the fishways designed to help fish swim up-river to breeding grounds are actually trapping the animals, sending them to their death.

Science journal *Nature* reports that fishways or fish ladders have been instituted in many large dams after it was found that fish numbers were declining. However, the situation has not improved, causing researchers to think that the fishways themselves might be to blame.

The fishways provide river-like flow conditions that attract migrant fish looking for

spawning grounds. At the top of the fishways, the fish arrive in reservoirs, but because conditions in the reservoirs are not favourable (the waters are too clear and still to provide the cover the fish rely on to hide from predators, or the oxygen they enjoy in rivers), the fish bolt for tributaries to spawn.

If swift-water tributaries are not available, the fish die. If they do manage to spawn, upon hatching the offspring travel downstream and hit the edge of the reservoir, where they often die in anoxic waters or are eaten by predators before finding the ladder that leads downstream to safety.

Researchers have now called on infrastructure development agencies to develop fishways specifically for Brazilian fish populations.



R&D crucial to Rand Water revamp plans

Continuous research and development into new techniques and materials to repair or replace old pipelines remains a critical element of Rand Water's pipeline renovation programme.

The country's largest water utility operates a network of more than 3 000 pipelines, supplying water to more than 11 million people in Gauteng and parts of Mpumalanga, North West and the Free State. With some of its pipelines being more than 70 years old, the company has embarked on an expansive programme to upgrade and refurbish its distribution infrastructure.

According to its latest annual report,

Rand Water invested R630-million in augmenting, refurbishing, upgrading and maintaining its water supply infrastructure during the 2006/2007 financial year. Over the next five years, the company plans to spend close to R4-billion on renewing its pipelines. Of this amount, 57% will be allocated to augmentation projects, with the remaining 43% allocated to renovations and upgrades of existing infrastructure, said Acting CE Zvinaiye Manyere.

Rand Water's R&D is focused mainly on the development and application of new processes and materials for pipelines, which account for the major part of the

company's capital budget expenditure. Research is conducted both by internal staff and using external agencies such as universities, the Water Research Commission (WRC) and suitably qualified consultants and contractors.

Typical pipeline-related projects are those dealing with leaks, friction factors, biofilms, detection of air pockets, performance of epoxy and polyurethane linings, and in-line filters for bitumen particles. One project funded by the WRC involves the use of grouted polyethylene liners to seal leaks in old steel pipelines. This five-year project is due for completion by 2009.

New publication offers solutions to skills shortage

The South African Institution of Civil Engineering's (SAICE's) latest publication dealing with sector capacity, *Numbers & Needs in Local Government: Civil Engineering – the Critical Profession for Service Delivery*, is now available.

The publication, authored by former SAICE president Allyson Lawless, covers extensive research on the challenges of service delivery in local government and the suggested interventions that will affect

a turnaround, which are both feasible and achievable. "There is no alternative for South Africa but to build a strong third tier of government," said Lawless at the launch late last year.

For various reasons experienced engineers continue to leave for the private sector or emigrate. The status of civil engineering staff in local government was estimated to be between 1 300 and 1 400, indicating a net loss of 70 to 90 a year since the late 1980s. This means an average of less than three civil engineering staff per 100 000 people. According to Lawless, South Africa has a limited window of opportunity of maximum ten years to turn around the skills decline and transfer expertise. This period relates to the fact that the majority of experienced civil engineering professionals are in their late fifties and older. Local government carries the responsibility for ensuring sustainable

and efficient water supply, sanitation, roads, electricity, waste disposal, health facilities, which are only achievable with appropriate engineering skills in place.

Lawless provides sets of practical short-, medium-, and long-term interventions. She has created a model of three parallel streams of activities, including a turnaround team in engineering departments, to develop plans and grow capacity. Lawless believes that the preoccupation with restructuring should be replaced with a determination to rebuild technical structures. "The zoom-in and zoom-out short-term support currently being offered, while necessary to address burning issues, does little to build the long-term sustainability of local government."

To obtain a copy of the publication, contact SAICE at Tel: (011) 805 5947/48 or Fax: (011) 805-5971; or E-mail: civillinfo@saice.org.za



WATER ON THE WEB

www.bpd-waterandsanitation.org/web/w/www_149_en.aspx

This website provides information on small-scale independent providers in water, sanitation and electricity. It includes documents, studies, other web links, articles, interviews and information on research programmes.

www.circleofblue.org

Circle of Blue is a multimedia initiative providing news, features, photo galleries and videos on the challenges and solutions to the global freshwater crisis. Circle of Blue is a non-profit affiliate of the Pacific Institute, an independent, nonpartisan think-tank based in California, in the US.

www.worldfishcenter.org

This is the official website of the World Fish Center, a non-profit organisation focusing on alleviating poverty and hunger by improving fisheries and agriculture. It is one of the research centres supported by the Consultative Group on International Agricultural Research (CGIAR).